

Application No.: 10/678841

Case No.: 59011US002

REMARKS

New claims 43-52 are now of record for consideration. All of the previous claims, namely claims 1-42 have been cancelled.

New claim 43 is directed toward a method of bonding orthodontic appliances using an array of solid state light emitters that is placed directly in the oral cavity. When placed, the array of light emitters lies along a path that is located in an occlusal direction from the outer tips of the patient's teeth. In order to initiate hardening of the photocurable material, the light emitters are activated and light from the light emitters is directed in a gingival direction toward the photocurable material that is between each orthodontic appliance and the adjacent tooth.

The method of bonding orthodontic appliances as set out in applicant's claims provides a number of significant advantages. For example, by retaining the light emitters in a location that is an occlusal direction from the outer tips of the patient's teeth, it is less likely that the light emitter will contact the appliances and move them from a previously selected location. Furthermore, by keeping the light emitters in a location that is in an occlusal direction from the outer tips of the patient's teeth, it is less likely that the light emitters will come into contact with the patient's saliva and move the saliva toward the area of bonding, where it could adversely affect the ultimate bond strength of the appliance to the tooth.

In addition, applicant's method of orthodontic appliance bonding as set out in the claims is advantageous because there is generally more free space available to place the light emitters and substrate in the patient's oral cavity in a location adjacent the occlusal tips of the teeth, in contrast to a location between the labial surfaces of the teeth and the patient's cheeks. As such, the substrate and light emitters can be constructed to provide a universal fit for a variety of patients, regardless of the overall size of the patient's dental arches. The method of the present invention also facilitates placement of the substrate and light emitters in posterior regions of the oral cavity, in contrast to methods that involve the use of placing a light source between the patient's cheeks and the labial surfaces of the patient's teeth.

Moreover, the present method of bonding orthodontic appliances is advantageous because a portion of the light emitted from the light emitters is transmitted in directions generally along the labial or front enamel surfaces of the patient's teeth. Such practice tends to transilluminate the

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teeth, which in turn facilitates the travel of light to the photocurable material. Light that is traveling in a generally gingival direction along the labial surfaces of the patient's teeth is not blocked by the appliance, and hence a greater amount of light may reach the photocurable material in contrast to a method where the light travels in a lingual direction and a significant portion of the photocurable material may lie within the shadow of the appliance.

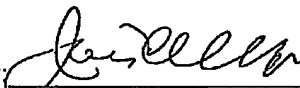
None of the prior art of record, whether considered alone or in any hypothetical combination, suggests the inventive concepts of the present subject matter of the claims. The patents to Nikodem, U.S. No. 5,813,854, and Cohen et al., U.S. No. 3,949,477, both show devices that direct light in a lingual direction. Additionally, neither of these references disclose or suggest the use of solid state light emitters in the oral cavity. The patent to Rizoiu et al., U.S. No. 6,616,447, relates to a device for whitening teeth, and provides no motivation for one to adopt the use of such device for bonding orthodontic appliances.

For the reasons set out above, it is believed that this application is in condition for allowance and such action is courteously appreciated.

Respectfully submitted,

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Date

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